Calorhamphus hayii (Gray).

Calorhamphus hayii, Oates, *t. c.* p. 138; Hume, Str. F. 1879, p. 53.

"No. 106. ♂ ad. Gunong Batu Putch (3400 feet).

"Irides red-brown; legs and feet orange."

2. Descriptions of Four new Species of Ophiurids.

By Prof. F. Jeffrey Bell, M.A., Sec. R.M.S.

[Received April 26, 1888.]

(Plate XVI.)

The descriptions of the Ophiurids that follow will, I think, be of interest to workers at the systematic zoology of the group—one to which, without doubt, we have still to add many interesting and important forms.

1. Pectinura ramsayi, sp. nov. (Plate XVI. figs. 1, 2.)

Beneath the superficial granulation of the disk are fine scutes; there are pores between the first and second arm-joints only; the radial shields are naked; there are eight arm-spines and two tentacle-scales.

This is so obviously a distinct species that I have no hesitation in describing it from a single example.

The disk is not puffed or swollen, and has a diameter about one sixth the length of the arms; these taper gradually, and the joints are laterally compressed. There are seven mouth-papillæ, of which the penultimate is quite twice as large as any of the rest; the mouth-shield is in the form of an irregular pentagon, the two outer being shorter than the two inner or adoral sides; the accessory mouth-shield is semicircular. The upper arm-plates are quite twice as long as broad, and have fairly straight sides; the side-plates generally carry eight subequal arm-spines; the first lower arm-plate is lenticular; the rest are wider than long, widely separated from one another on either side owing to the encroachment of the side-plate; the adoral and aboral edges are straight. The radial shields are small, irregularly oval, the proximal pole being narrower than the distal; the granulation on the lower is rather coarser than that on the upper surface of the disk.

The general colour of the specimen is greenish above, but the radial shields are pink, and there are, at intervals, patches of pink on the arms, about every fifth dorsal plate being pink; below, the creature is lighter in colour, with darker bands on the arms.

Diam. of disk 17 mm.; length of arm 68 (ca.) mm.

Hab. Port Jackson; in coll. B.M.

The only other known species in which there is a fine scutellation with pores between first and second arm-joints only is *P. maculata*,

where the arms are proportionately longer, the disk swollen, and the accessory mouth-shield double or triple, and the colour is very different; but it may be of some significance to observe that that species is from the not distant shores of New Zealand.

2. Pectinura capensis, sp. nov. (Plate XVI. figs. 3, 4.)

Beneath the superficial granulation of the disk are well-marked, somewhat swollen plates; there are no pores between the arm-joints; the radial shields are naked; there are ordinarily five short arm-spines and two tentacle-scales.

There are two representatives of this well-marked species, but, unfortunately, none of the arms are complete.

The disk does not appear to be puffed or swollen, and its diameter is probably about one fifth the length of the arms; there is a slight ridge to the arms. There are seven or eight mouth-papillæ; the outermost is very small, the penultimate very large; the mouth-shields are triangularly cordiform, the sides faintly notched, the accessory mouth-shields small and sometimes divided.

The upper arm-plates are encroached upon by the side-plates in such a way that their lateral margins are acutely angulated, and the plates are wider in their middle than along either the proximal or distal edge; the side arm-plates are a little swollen and projecting, and ordinarily carry five short spines; the under arm-plates have the distal edge, which is concave adorally, nearly twice as long as the proximal; the sides are excavated by the two tentacle-scales, the inner of which is obscured by lying behind the lowest spine.

The naked radial shields are rather small, irregularly pyriform. There is very little difference between the rather coarse granulation of the upper and lower surfaces of the disk.

The dried specimens are yellowish in colour; darker bands extending over four or five joints of the arm are separated from one another by about five more lightly coloured joints.

Diam. of disk 10 mm.

Hab. Cape of Good Hope; in coll. B.M.

According to the arrangement of Mr. Lyman ('Challenger Report,' p. 14), this new species stands between *Pectinura infernalis*, in which there are nine, and *P. heros*, in which there are three arm-spines.

3. Ophiopeza assimilis, sp. nov. (Plate XVI. fig. 5.)

A species very closely allied to, but apparently distinct from, *O. conjungens*, Bell; thus the arms are not carinated, are more, not less, than four times the diameter of the disk, the granulation of the disk is coarser, the radial arm-shields are less prominent, the mouth-shield is of a somewhat different contour, and the arm-spines are subequal.

I must confess that had this specimen come from Torres Straits instead of Port Jackson, I should have greater hesitation in regarding it as representative of a distinct species—great as the hesitation has been. But the differences between the fauna of Port Jackson and Torres Straits are, as we are now beginning to recognize generally, so considerable that the difference in habitat together with the number of

distinctive characteristics—minute though some of them may appear to be—seem to justify the formation of a new species for this form.

The description is drawn up from a single dried specimen.

Disk distinctly, but not sharply, pentagonal; arms about four and a half times its diameter; they are not carinated at their base, nor, on the other hand, markedly flattened; they taper gradually. Granulation of disk rather coarse, about nine granules to a millimetre; the radial shields not marked by special depressions. Mouth-shields not divided, irregularly lenticular, the more convex edge being adoral; side mouth-shields quite small; the granulation between the mouth-shield and the edge of the jaw is very coarse. Mouth-papillæ seven, the penultimate quite twice the size of its neighbours.

The upper arm-plates have pretty straight edges, and are about twice and a half as long as broad; the under arm-plates are not quite so much encroached upon by the side-plates as in *O. conjungens*, and are rather more regularly hexagonal; an aboral notch frequently found in the allied species is not to be seen in the one now under description. The side arm-plates carry ten subequal spines[1], none of which are as long as the plate that bears them; there are two tentacular scales near the base of the arm and one further out; there are two pores between the first and second arm-plates.

It would be unsafe to form a judgment as to the colour of this species either when alive or as preserved in alcohol; but it is probably paler than *O. conjungens*, and not so much mottled; there are signs of sets of three joints at a distance of from seven to ten joints from one another being darker than the rest; this would give a banded appearance to the arms; the mouth-shields are probably darker than the rest of the oral surface.

Diam. of disk 100 (ca.) mm; length of arms 24 mm.

Hab. Port Jackson; in coll. B.M.

4. Ophioglypha amphitrites, sp. nov. (Plate XVI. fig. 6.)

This species appears to belong to Mr. Lyman's first division of the genus, or those in which the disk is flat and is "covered with imbricated scales. Under arm-plates small, widely separated; much wider than long beyond the second plate, and thereafter constantly diminishing in size. Arm-comb of more or less needle-like papillæ. Arm slightly flattened, with spines about as long as a joint. Tentacle-scales few, beyond the second pair of pores." But it does not appear to be referable to any form yet described.

Arms three to four times the diameter of the disk. Mouth-papillæ five at the outer mouth-angle, separated by a bare space from the five (two on each side, and one larger central one) which lie just below the teeth, and have almost the appearance of teeth-papillæ. Mouth-shield longer than broad, a little constricted in the middle, distal edge rounded, proximal forming an acute angle; side mouth-shields long and narrow, meeting within.

First under arm-plate broader distally than proximally, the second

[1] *O. conjungens* may bear nine or ten arm-spines near the base of the arms.

and succeeding shorter, triangular in shape, with the apex proximal. All the side arm-plates meet their fellows below, the line of suture deep; above the insertion of the spines they appear to form a scale on the side of the arm. Upper arm-plates broader than long, very regularly oblong, though the proximal edge is encroached upon by the scale-like portions of the side arm-plates; a good deal arched near the disk.

Disk bulging a little between the arms, flat, covered with plates of various sizes, among which the five primary and the central are very distinct; a not very regular row of plates extends along the middle of each interbrachial space as far as the edge of the disk. Just below this there is one very large plate. Radial shields rather long, broader without than within, where they are pointed; separated from one another. The scales on the actinal surface diminish in size and increase in numbers from without inwards. Papillæ along edge of genital scale small, numerous, closely set; about twelve may be seen from above, of which the uppermost are smaller than those just beyond them. Arm-spines three or four, of which the uppermost is longest, and longer than an arm-joint. Three tentacle-scales as far as the sixth or seventh arm-joint; a rudimentary third may persist for some further distance; after a time the second scale disappears and only one persists.

Hab. Ecuador; from the Haslar coll. (J. O. Goodridge, Surgeon R.N.). Coloration creamy yellow, in alcohol, after perhaps thirty years' preservation.

Measurements.—Diam. of disk 19; 16 mm. Length of arms 74; 54. Breadth of arms at base 5; 3·5. Length of radial shields 4; 3·3.

EXPLANATION OF PLATE XVI.

Fig. 1. *Pectinura ramsayi*, from above, to show the general form of the body.
2. Mouth-angle of *P. ramsayi*, × 2.
3. *P. capensis*, from above, × 2.
4. Mouth-angle of *P. capensis*, × 4.
5. Mouth-angle of *Ophiopeza assimilis*, × 2.
6. Mouth-angle of *Ophioglypha amphitrites*, × 4.

3. On certain Points in the Visceral Anatomy of *Balæniceps rex*, bearing upon its Affinities. By Frank E. Beddard, M.A., Prosector to the Society, Lecturer on Biology at Guy's Hospital.

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I have been able lately, through the kindness of Mr. Charles Stewart, to examine the viscera of a specimen of *Balæniceps rex* preserved in the stores of the College of Surgeons. The specimen was purchased from this Society some 25 years ago; it was one of those brought back by Mr. Petherick in 1860.

So far as I am aware there has been no description of the viscera of